JUNCTION CITY, OREGON

WETLAND POLICY ALTERNATIVES AND ECONOMIC, SOCIAL, ENVIRONMENTAL, AND ENERGY (ESEE) ANALYSIS

Adopted September 18, 2012 – Ordinance 1212
Acknowledged by DLCD August 9, 2013 – Order 001840

TABLE OF CONTENTS

Winterbrook Planning
310 SW Fourth Avenue, Suite 1100
Portland, OR 97204
503.827.4422 ▪ 503.827.4350 (fax)
greg@winterbrookplanning.com

Tables, Figures and Attachments

1. INTRODUCTION AND BACKGROUND

Customized Periodic Review Tasks

In 2010 Winterbrook Planning prepared a memorandum entitled "Wetland Policy Alternatives and Draft ESEE Analysis" that addressed Tasks 3(c) and 3(d) of Phase II of the Junction City Customized Periodic Review Work Program.[1] These tasks committed Junction City to:

(c) Conducting a Goal 5 ESEE Analysis based on the final draft Local Wetland Inventory (LWI) submitted to the Department of State Lands (DSL); and

(d) Preparing a draft staff report for City review and presenting the LWI, Code and Plan amendments and findings at a work session of elected and appointed officials.

The 2010 draft program would have (a) protected "relatively high quality" wetlands using the "safe harbor" provisions of OAR 660-023-100; and (b) relied on DSL to protect "relatively low quality" wetlands.

2012 ESEE Analysis for Locally Significant Wetlands

In 2012 the Planning Commission and City Council tentatively approved the content of a new ordinance to protect "locally significant wetlands" (LSW). The decision to change the local protection program necessitated a change in the ESEE (Economic, Social, Environmental, and Energy) consequences analysis that justified the 2010 draft program. These changes (and related conflicting uses and activities) are discussed in Section 3 of this ESEE Analysis

[1] Tasks 3(a) and (b) included the preparation and review of the Local Wetland Inventory (LWI) and wetland assessment.

– Identification of Conflicting Uses and Activities. Since Junction City will not be relying on the wetlands protection "safe harbor", the Goal 5 Rule (OAR 660-023-1000(4)(a) requires that the City: "Complete the Goal 5 process and adopt a program to achieve the goal following the requirements of OAR 660-023-0040 and 660-023-0050;" This means that the City must determine an impact area,[2] identify conflicting uses,[3] conduct an ESEE analysis, and adopt a local protection program[4] based on the ESEE analysis.[5]

The 2012 ESEE Analysis considers the consequences of full local protection (prohibit conflicting uses), no local protection (rely exclusively on DSL to regulate wetlands), and limited local protection (apply Ordinance 950). Junction City's "limited protection program" is set forth in draft **ORDINANCE NO. 950 - Wetland Resources Overlay District (WRD)**. Attachment A includes the full text of Ordinance No. 950.

---

[2] OAR 660-023-0040(3): *"Determine the impact area. Local governments shall determine an impact area for each significant resource site. The impact area shall be drawn to include only the area in which allowed uses could adversely affect the identified resource. The impact area defines the geographic limits within which to conduct an ESEE analysis for the identified significant resource site."*

[3] OAR 660-023-0040(2): *"Identify conflicting uses. Local governments shall identify conflicting uses that exist, or could occur, with regard to significant Goal 5 resource sites. To identify these uses, local governments shall examine land uses allowed outright or conditionally within the zones applied to the resource site and in its impact area. Local governments are not required to consider allowed uses that would be unlikely to occur in the impact area because existing permanent uses occupy the site."*

[4] OAR 660-023-0010(7) Definitions: *"'Protect,' when applied to an individual resource site, means to limit or prohibit uses that conflict with a significant resource site (except as provided in OAR 660-023-0140, 660-023-0180, and 660-023-0190). When applied to a resource category, "protect" means to develop a program consistent with this division."*

OAR 660-023-0040(5) goes on to explain a local government's program options to "allow", "limit" or "prohibit" conflicting uses for an LSW: *"Develop a program to achieve Goal 5. Local governments shall determine whether to allow, limit, or prohibit identified conflicting uses for significant resource sites. This decision shall be based upon and supported by the ESEE analysis. A decision to prohibit or limit conflicting uses protects a resource site. A decision to allow some or all conflicting uses for a particular site may also be consistent with Goal 5, provided it is supported by the ESEE analysis. One of the following determi-nations shall be reached with regard to conflicting uses for a significant resource site: (a) A local government may decide that a significant resource site is of such importance compared to the conflicting uses, and the ESEE consequences of allowing the conflicting uses are so detrimental to the resource, that the conflicting uses should be prohibited. (b) A local government may decide that both the resource site and the conflicting uses are important compared to each other, and, based on the ESEE analysis, the conflicting uses should be allowed in a limited way that protects the resource site to a desired extent. (c) A local government may decide that the conflicting use should be allowed fully, notwithstanding the possible impacts on the resource site. The ESEE analysis must demon-strate that the conflicting use is of sufficient importance relative to the resource site, and must indicate why measures to protect the resource to some extent should not be provided, as per subsection (b) of this section".*

[5] OAR 660-023-0040(1) ESEE Decision Process: *"Local governments shall develop a program to achieve Goal 5 for all significant resource sites based on an analysis of the economic, social, environmental, and energy (ESEE) consequences that could result from a decision to allow, limit, or prohibit a conflicting use."*

2. LWI SUMMARY

Winterbrook submitted the draft LWI Report and maps to Junction City and DSL staff for review and comment in July of 2010. In August through October, Winterbrook incorporated agency comments into the final draft of the LWI. DSL approved the Junction City LWI in December 2011.

The LWI Report describes the location, quantity and quality of 14 wetlands comprising approximately 264 acres, or about 15% of the land area within the Junction City Urban Growth Boundary (UGB). These 14 wetlands are grouped by location or (drainage sub-basin):

- Bergstrom Canal (BC): one wetland just over an acre
- Central Canal (CC): five wetlands totaling about 20 acres
- Flat Creek (FC): three wetlands totaling about 236 acres
- East Canal (EC): three wetlands totaling about 6 acres
- West Canal (WC): two wetlands totaling about 2 acres

Of these 14 inventoried wetlands, all but two met state criteria for "locally significant wetlands".[6] Thus, Junction City has 13 locally significant wetlands (LSW) totaling approximately **263 acres. These 13 LSW are the subject of the remainder of this ESEE analysis.**

Summary of Wetland Characteristics

This section considers the functions and values associated with "relatively low quality" and "relatively high quality" wetlands within the Junction City UGB.

Relatively Low Quality Wetlands

Junction City developed in an area with a high concentration of hydric (wet) soils. To create dry land for farming and development, drainage channels were constructed and wetlands were filled. A few residual ponds, open channels and undeveloped wetlands remained – especially in the area west of Oaklea Road and the relatively inaccessible southern leg of the UGB between Highway 99S and the railroad tracks.

These relatively low quality wetlands have five things in common:

(a) they have limited fish and wildlife habitat value (due in part to the lack of multi-layered native vegetation);

(b) they have either impacted water quality or impacted hydrological control functions;

[6] "Local significance" is determined using the Oregon Freshwater Wetland Assessment Methodology (OFWAM), as required by Oregon Administrative Rule (OAR) 141-086-0185. The "non-significant" exception is BC (1.22 acres).

(c) many have open channels which have been identified by Junction City citizens as having some aesthetic value;
(d) many have intact hydrological (flood) control functions; and
(e) none have educational value.

Most of the wetlands in this category are also relatively small (*i.e.,* less than 1.5 acres). The largest LSW (17.5 acres on Industrial land in a less urbanized portion of the UGB and approximately 100 acres of Residential land on the Oaklea site) have been farmed for years. Table 1 summarizes the size and ecological function for each wetland in this category. LSW CC, CC-02, CC-03, EC and WC and WC-01 have intact hydrological functions; LSW FC-02, FC-03 and WC-01 have intact water quality.

Table 1: Relatively Low Quality* Locally Significant Wetlands (LSW)

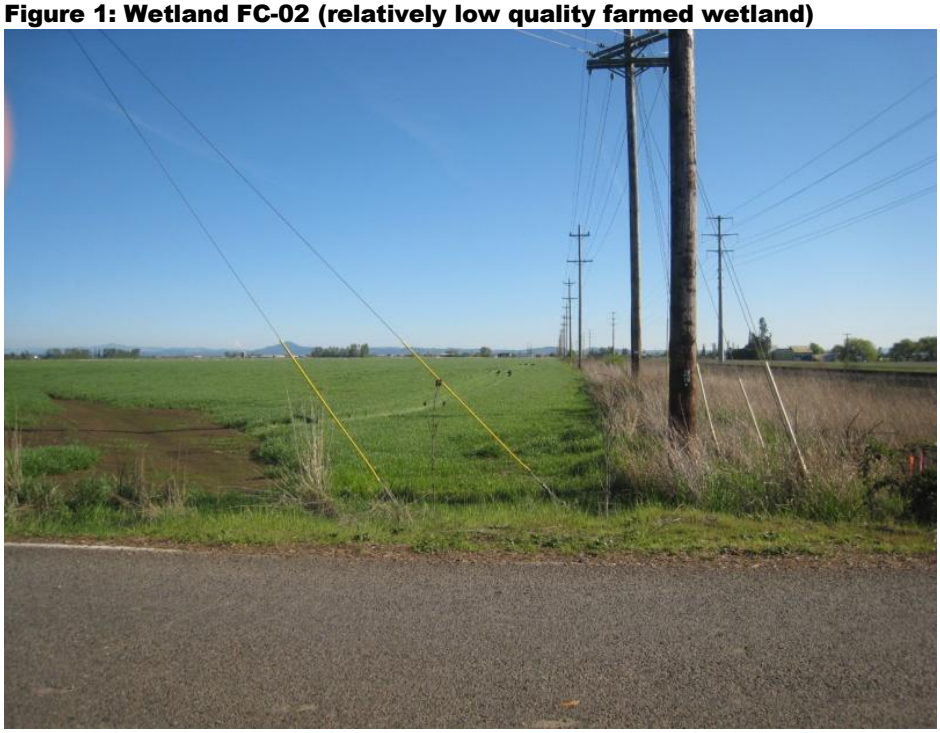
Wetland Code	Wildlife Habitat	Wetland Acres	Water Quality	Hydrologic Control
CC	Limited	3.8	Impacted	**Intact**
CC-02	Limited	0.73	Impacted	**Intact**
CC-03	Limited	0.5	Impacted	**Intact**
EC	Limited	3.4	Impacted	**Intact**
FC-01**	Limited	216.5	Impacted	**Intact**
FC-02	Limited	17.5	**Intact**	Impacted
FC-03	Limited	1.5	**Intact**	Impacted
WC	Limited	1.4	Impacted	**Intact**
WC-01	Limited	0.8	**Intact**	Impacted

* Based on Oregon Freshwater Wetland Assessment Methodology (OFWAM) results.
** Only the portions of FC-01 (Oaklea Site) located outside the boundaries of the WRD overlay are the subject of this ESEE analysis.

Source: Winterbrook Planning and Junction City Local Wetlands Inventory (2011)

Figure 1 on the following page shows a farmed wetland in an industrial area. Full protection of this relatively low quality farmed wetland could limit the development potential of the affected industrial property.

Figure 1: Wetland FC-02 (relatively low quality farmed wetland)



Source: Winterbrook Planning, 2009

Relatively High Quality Wetlands

Unlike lower quality wetlands described in Table 1, the relatively high quality wetlands described in Table 2 offer more obvious community benefits. The five relatively high quality LSW are: **Wetland CC-01; Wetland CC-04; Wetland EC-01;[7] Wetland EC-02 and Wetland FC-01.**[8]

These wetlands are considered relatively high value because they have some combination of the following characteristics:

- Diverse wildlife habitat – due to the presence of multi-layered, native vegetation (Wetlands CC-01 and CC-04);
- Intact water quality *and* hydrologic control (Wetlands CC-04, EC-01, EC-02);
- Educational value (Wetland CC-01); or have an existing
- Junction City Open Space designation (Wetland FC-01).

Table 2 on the following page summarizes the size and ecological function for each wetland in this category.

[7] EC-01 is mostly outside the Junction City UGB; only the western portion of this LSW would be subject to the WRD overlay.

[8] Note: The eastern portion of FC-01, including DSL #08-0239 and the public sewage treatment site (DSL #08-0582) that are not currently protected by local regulations would continue to be subject *only* to DSL (and not local) review.

Table 2: Relatively High Quality Locally Significant Wetlands (LSW)

Wetland Code	Wildlife Habitat	Wetland Acres	Educational Value	Water Quality	Hydrologic Control
CC-01	**Diverse**	0.5	**Yes**	**Intact**	Impacted
CC-04	**Diverse**	14.0	No	**Intact**	**Intact**
EC-01	Limited	2.0	No	**Intact**	**Intact**
EC-02	Limited	0.9*	No	**Intact**	**Intact**
FC-01	Limited	216.5	No	Impacted	**Intact**
Note: Quality is based on size, OFWAM results and regulatory status. * EC-02 has only 0.06 acres within the Junction City UGB; the remaining 0.83 acres are located outside the UGB.					

Source: Winterbrook Planning and Junction City Local Wetlands Inventory (2011)

- **Wetland CC-01** has intact water quality and hydrological control functions. Wetland CC-01 is unique in Junction City because of its location on the Laurel Elementary School site (the reason for its exceptional educational value).

- **Wetland CC-04** is a large (14 acres) forested wetland complex with considerable native vegetative and wildlife habitat diversity; Wetland CC-04 also has "intact" water quality and hydrological control functions. Wetland CC-04 is located on Industrial land (the Weyerhaeuser site) south of High Pass Road and east of Highway 99, between the railroad tracks.

Figure 2: Wetland CC-04 (relatively high quality forested wetland)

Source: Winterbrook Planning, 2009

- **Wetland EC-01** is unusual because of its intact water quality *and* hydrological control functions. It also provides an aesthetic community benefit because of its "open water" character and visibility from Highway 99.

- **Wetland EC-02** is also an open water wetland that has intact water quality *and* hydrological control functions. However, most of this wetland lies outside the UGB and therefore is not within Junction City's jurisdiction.

Figure 3: Wetland EC-01 (relatively high quality open water wetland)

Source: Winterbrook Planning, 2009

- **Wetland FC-01** is associated with the "Oaklea Site" and is located on both sides of Flat Creek west of Oaklea Road and north of the sewage treatment ponds. This wetland complex covers 216.5 acres and includes two delineations approved by DSL.[9] The Junction City Comprehensive Plan map designates some of this wetland complex as "Open Space". The Open Space designation is implemented by the City's adopted Stream Corridor and Wetlands Overlay District, which prohibits most types of urban development. In 2007-08, some of Wetland FC-01 was protected as a condition of approval for residential planned unit development on the northern (residential) portion of the Oaklea property.

[9] Includes most of the approved wetland delineations east of Flat (Crow) Creek (DSL File Numbers 98-0293 and 04-0250).

3. IMPACT AREA, CONFLICTING USES AND ACTIVITIES

Impact Area Determination

The impact area identified in the WRD is 30 feet from the mapped wetland edge. This impact area recognizes the margin of error that is assumed when mapping a wetland using the OFWAM method.

Except for standard erosion control and drainage standards that apply on a city-wide basis, the WRD does not limit conflicting uses within the wetland impact area; however, if development is proposed within the "impact area" the City will require DSL approval of a formal wetland delineation to determine the precise location of the LSW.

Conflicting Uses

The Goal 5 rule requires cities to determine conflicting urban uses based on uses allowed by applicable zoning districts and activities permitted by the WRD. Table 3 shows the zoning districts that apply to each LSW.

Table 3: Conflicting Zoning for Relatively Low and High Quality LSW

Wetland Code	Residential	Commercial	Industrial	Other
Relatively Low Quality Wetlands				
CC	X			Public Land
CC-02	X			
CC-03	X	X	X	Public Land
EC	X	X	X	Public Land
FC-01	X		X	Public Land
FC-02			X	
FC-03			X	
WC	X			
WC-01	X			
Relatively High Quality Wetlands				
CC-01				Public Land
CC-04			X	
EC-01		X	X	
EC-02	X			County EFU
FC-01	X		PT (Professional Technical)	Open Space RC Overlay

Source: Winterbrook Planning and Junction City Comprehensive Plan Map.

Development and disturbance activities that can adversely affect LSW occur within each of Junction City's underlying zones; however, the degree or intensity of the impacts may vary depending on the intensity of the land use, the form, layout or design of the development, construction protocols or ongoing operation and maintenance activities.

As can be observed from Table 3:

- Residential Conflicts: Four relatively low quality wetlands are located only in Residential zones (CC, CC-02, WC and WC-01).

- Industrial Conflicts: Two relatively low quality wetlands (FC-02 and FC-03) and one relatively high quality wetland (CC-04) are located exclusively in Industrial zones.

- Multi-Zone Conflicts: Four relatively low quality wetlands (CC, CC-03, EC, FC-01) and three relatively high quality wetlands (EC-01, EC-02, FC-01) are located in a combination of Residential, Commercial, Industrial and/or Public zones.

- School Conflict: One relatively high quality wetland is located on public land (CC-01).

Conflicting Uses and Activities Allowed by WRD

The WRD prohibits most conflicting uses allowed by the Residential, Commercial, Industrial and Public zoning districts.

However, potentially adverse environmental activities from permitted and conditional land uses (including construction and maintenance of public facilities) allowed in the zones described in Tables 1 and 2 include:

(1) Excavation, grading and placement of fill (where necessary for and allowed use);

(2) Construction of impervious surface area and associated drainage, water quality impacts and wildlife habitat impacts (where necessary for an allowed use); and

(3) Native vegetation removal and planting of non-native species and associated water quality and wildlife habitat impacts (where necessary for an allowed use).

The full local protection option would *not* permit any of these activities. The no local protection option would leave these issues to DSL to resolve. As noted below, Junction

City's WRD would allow all of these conflicting activities on a limited basis when associated with an exempt, permitted or conditional use.

Section 11 of the WRD "exempts" a number of activities within LSW boundaries that do not conflict substantially with wetland conservation, including: (b) removal of refuse or unauthorized fill; (c) maintenance of existing structures, impervious surfaces and landscaped areas; (d) replacement of an existing structure on the same footprint; (g) wetland restoration and rehabilitation; and (i) education and passive recreation.

However, **Section 11** allows some activities that conflict with wetlands conservation, including: (a) temporary emergency procedures such as tree removal and bank stabilization; (f) removal of vegetation (including native vegetation) in conjunction with an approved use; (h) continuance of farming practices; (j) forest management practices in accordance with the FPA; and (l) fill and removal for surface water diversion authorized by the Oregon Water Resources Department. Of these, the exemption for replacing existing vegetation (including native vegetation) has the greatest potential adverse impact on water quality and wildlife habitat – especially in LSW with intact water quality and wildlife habitat functions.

Section 12 lists "permitted uses" that conflict with wetland conservation, including: (a) single-family home on a lot of record; (b) pedestrian and bicycle paths and bridges; (c) other passive and active recreational uses; (d) water-dependent uses; (e) new public facilities; and (f) land divisions (where designed to allow construction of permitted uses outside of protected wetlands). Many of these permitted uses are subject to mitigation standards in Section 12. The development standards in **Section 15** require an alternatives analysis for siting of permitted uses. In addition, mitigation for "impacts" is required. Of these, allowing active recreational use (developed park facilities) could have serious and long-term impacts on "protected" wetlands.

Section 13 lists "conditional uses" that conflict with wetland conservation, including: (a) park and recreational facilities not listed as permitted uses; and (b) private transportation facilities. **Section 16** includes local mitigation standards for listed conditional uses and variances – although the Planning Commission "may allow some degree of flexibility to the standards based on the specific location and level or impact."

Conclusion: The WRD overlay district exempts vegetation removal "in conjunction with an approved use" from local regulation and permits a wide range of uses (and associated activities) that could adversely affect the functions and values of LSW in Junction City – especially those with intact water quality and wildlife habitat functions. Where applied, the WRD is reasonably effective in maintaining wetlands and open ditches with surface water – but is relatively ineffective in protecting wildlife habitat and maintaining water quality. The ESEE consequences of this "limited protection program" and of the full local protection and no local protection (reliance on DSL) options are evaluated below.

4. ESEE CONSEQUENCES ANALYSIS – RELATIVELY LOW QUALITY LSW

This section considers the ESEE consequences of three alternatives for protecting relatively low quality but nevertheless significant wetlands as required by the Goal 5 rule:

(a) Full local protection (allowing no conflicting land uses or activities);
(b) No local protection (relying solely on DSL regulations); and
(c) Limited local protection[10] in additional to DSL regulation.

As further discussed in Section 5 of this analysis, the ESEE consequences for relatively low quality LSW are different from those of relatively high quality LSW.

Economic Consequences for Relatively Low Quality LSW

Junction City's grid street system serves developed and buildable land that is drained by a network of channels and small ponds that qualify as locally significant wetlands (LSW). This network of open channels provides substantial flood control benefits to the community. In developed areas, the channels often follow street rights-of-way or run between subdivision lot lines, indicating that wetland areas were channelized to allow urban development. However, in undeveloped areas, it may be necessary to relocate or fill these linear wetlands to allow efficient urban development or to allow public facilities. In several cases, protection of expansive but relatively low quality wetlands in undeveloped areas potentially could restrict maximum development of Industrial land.

Full Local Protection Option (No Conflicting Land Uses Allowed)

The economic consequences of full local protection would be adverse, because relatively low quality LSW could no longer be filled or relocated to allow for efficient urban development or for extension of infrastructure. In addition to prohibiting residential, commercial, industrial and public uses allowed by the base zone, full local wetland protection would make it impossible to extend streets and utilities necessary to allow for access and full utilization of underdeveloped properties.

On the other hand, full protection of relatively low quality wetlands would preserve their hydrological control functions. Full protection of Wetlands FC-01 (Oaklea) and FC-02 (Lane Forest Products) would preclude Residential and Industrial development on most of the affected sites. Full protection of Wetlands CC-03, FC-02, and FC-03 could *potentially* limit industrial expansion on these sites.

[10] The "limited protection option" relies on the City's Water Resources Overlay District (WRD). The WRD is intended to conserve the significant stream corridors, locally significant wetlands and approved wetland mitigation sites, consistent with the Goal 5 Administrative Rule (OAR Chapter 660, Division 23).

For these reasons, there could be significant adverse economic impacts resulting by a local ordinance that fully protected (allowed no conflicting land uses on) relatively low quality LSW.

No Local Protection Option (Reliance on State Regulations)

The economic consequences of no local protection (relying on the State's fill and removal law) would, in most cases, be positive when compared with the full local protection option. DSL regulations allow some flexibility to allow conflicting urban uses where no reasonable alternative exists; and, like the limited local protection option, DSL regulations may allow road and utility extensions where necessary to serve urban development.

DSL regulations also allow for limited wetland fill and removal on the 18-acre farmed wetland (FC-02) and on Wetland FC-01 (approximately 100 acres east of Flat Creek) on the Oaklea site. DSL regulations provide the flexibility necessary to create suitable industrial land in the southern portion of the UGB; whereas either the full or limited local protection options could severely limit the efficient development of the affected Residential and Industrial sites – which could adversely affect the property owner and the community (in terms of potential lost housing and jobs).

Thus, there will be situations where it makes economic sense go through the state process to allow for more efficient urban development. Although there could be economic costs associated with this process (which requires on- or off-site mitigation, or payment of a fee to DSL), these costs may be off-set by increased development potential of sites affected by LSW. Thus, the economic impact of no local protection (relying solely on DSL regulations) could be positive in many cases.

Based on potentially adverse economic consequences, the City has decided not to provide local protection (and therefore to rely on DSL review) for LSW with Industrial conflicts (LSW CC-03, FC-02 and FC-03), despite documented adverse social and environmental consequences.

Limited Protection Option (Application of the WRD)

The City's Water Resources District (WRD) offers limited protection to selected relatively low quality LSW within its boundaries (Wetlands CC, CC-02, EC, FC-01, WC and WC-01). For locally protected LSW, the WRD balances ESEE consequences by allowing public facilities, park and recreation and other allowed uses with some mitigation. The WRD explicitly recognizes that the local limited protection program is *in addition to* DSL fill and removal requirement, which require an applicant demonstrate why a wetland cannot be avoided, to show how impacts have been minimized, and to meet demanding DLS wetland mitigation requirements.

Application of the WRD in industrial areas would further impede potential development of Industrial sites with relatively low quality wetlands CC-03, FC-02, and FC-03. For this reason, the City has chosen to rely solely on DSL review.

Generally speaking, fill and removal of relatively low quality wetlands is more feasible (and less expensive) than fill and removal of relatively high quality wetlands – because there are fewer functions and values to replace.

However, application of the WRD to relatively low quality wetlands with open water that are not zoned for Industrial use could be reasonably effective in maintaining their aesthetic value and their hydrological (flood) control function (notably Wetland CC, CC-02, EC, FC-01, WC, and WC-01). The City notes that aesthetics have economic value for nearby Residential and Public uses. Application of the WRD to these LSW limits the likelihood that these wetlands will be relocated, piped or filled to facilitate residential, commercial or public uses.

Although the WRD allows for public facilities necessary to serve adjacent development (subject to an alternatives analysis), and recreational and water-dependent uses, it does not permit filling or relocating drainage channels or wetlands with open water to allow for these and other exempt, permitted and conditionally allowed types of urban development.

Thus, unlike the no local protection option (relying on DSL requirements), the limited protection option would offer greater flexibility to permit fill of relatively low quality wetlands in Industrial areas, while protecting open water channels in Residential, Commercial and Public areas of the City .

Social Consequences for Relatively Low Quality LSW

Even relatively low quality LSW provide aesthetic and functional benefits for a community. For example, a wetland can add value and enjoyment in a residential setting, or provide places to relax and enjoy scenic views in a work setting. Wetlands also provide social values in terms of connecting city dwellers to outdoor recreational opportunities. Open water areas, including open channels, provide aesthetic enjoyment to passers-by and adjoining property owners and employers. Wetlands can also provide educational value when they are relatively high quality and accessible to schools; however, the 2010 LWI found that none of the lower quality LSW have educational value.

However, protecting relatively low quality LSW on otherwise buildable land can have the unintended consequence of increasing housing costs or decreasing job opportunities, which have adverse social consequences. Because most relatively low quality wetlands listed in Table 1 offer some aesthetic value and limited fish and wildlife habitat value, their protection should be balanced against adverse impacts on the buildable land supply for housing and employment.

Finally, Junction City decision-makers place a high value on individual property rights and oppose unnecessary government regulation. Generally speaking, the City is opposed to multiple layers of government regulation – and for this reason is loath to

duplicate regulations already enforced by the Division of State Lands. This social value accounts for the City's decision to provide flexibility in the Junction City Water Resources District (WRD).

Full Local Protection Option (No Conflicting Land Uses Allowed)

The social consequences of full local protection are mixed. On the one hand, relatively low quality wetlands provide some contribution to urban aesthetics and provide a limited connection to nature. On the other hand, protecting these relatively low quality wetlands could limit development efficiency (thereby increasing housing costs, decreased job opportunities, decreased recreational opportunities, decreased access), with corresponding adverse social impacts.

No Local Protection Option (Reliance on State Regulations)

From the City's perspective, the social consequences of the no local protection for relatively low quality wetlands are more positive than the full protection option, because there is greater flexibility in state regulations. DSL requires mitigation for some wetland values that may be lost to development, while allowing more efficient use of residential, commercial, industrial and public land – with corresponding social benefits associated with lower housing costs, increased job opportunities, and increased recreational opportunities.

However, DSL focuses more on the environmental functions and values of wetlands as documented in the OFWAM method for determining local significance. The City places greater value on maintaining the aesthetic qualities of open water channels, which do not receive the same level of protection that is afforded by the WRD.

Limited Protection Option (Application of the WRD)

The social consequences of a limited protection option (application of the City's WRD to relatively low quality wetlands), could be less adverse than the full protection option for two reasons:

1. Public facilities, parks and recreational uses, and other relatively low impact uses are permitted in relatively low quality LSW; and

2. Limitations on fill and removal of open channels will preserve the aesthetic value of LSW with open water (Wetlands CC, EC, WC and WC-01).

Although replacement of existing (including native) vegetation is permitted when associated with an allowed WRD use, the City places greater weight on the social (*i.e.*, aesthetic) value of Wetlands CC, CC-02, EC, WC and WC-01 than it does on the limited wildlife habitat associated with these relatively low quality LSW.

Environmental Consequences for Relatively Low Quality LSW

Even relatively low quality LSW provide a wide array of environmental benefits. They protect and preserve drinking water supplies because they purify surface water and

ground water. They also reduce soil erosion because the vegetation holds the soil in place. The wetlands in Junction City specifically help to protect life and property during floods by storing and absorbing water. Moreover, they can provide limited fish and wildlife habitat function due to a presence of water, habitat for breeding, nesting, feeding and predator escape.

However, relatively low quality LSW have only limited fish and wildlife habitat value (due to the relative lack of native vegetation), and typically have limited water quality and storage functions. Moreover, vegetation in relatively low quality wetlands typically is dominated by invasive species, such as Himalayan blackberry, English ivy and reed canary grass. None of the relatively low quality LSW has intact wildlife habitat function, and only Wetlands FC-02, FC-03 and WC-01 have intact water quality functions.

Full Local Protection Option (No Conflicting Land Uses or Activities Allowed)

The environmental consequences of full protection would be positive, because these relatively low quality wetlands offer limited fish and wildlife habitat value. Likewise, they provide limited benefits for water quality or hydrologic control. In particular, Wetlands FC-02, FC-03 and WC-01 have intact water quality function, and Wetlands CC, CC-02, CC-03, EC, FC-01, and WC have intact hydrological control function. Thus, a full protection option would ensure protection for all LSW (and the environmental benefits they provide) from conflicting uses and activities identified in Section 2 of this analysis.

For example, grading activities and soil compaction can accelerate soil loss and erosion. These activities can reduce the capacity of soil to support vegetation by disturbing the soil structure and decreasing soil fertility, microorganisms, seeds and rootstocks. Soil porosity and stormwater infiltration can be reduced by grading, excavating, filling and soil compaction. This in turn can reduce groundwater recharge and in-stream summer and fall low flows, which adversely affects aquatic species. The full protection option would prohibit such uses in and around wetlands.

Adding impervious surfaces (e.*g*. buildings, parking areas, roads, sidewalks, and driveways) alters the hydrologic cycle by preventing stormwater infiltration and concentrating overland flow. This results in increased stormwater runoff and decreased groundwater recharge. Increased stormwater runoff can result in increased volume and flows in receiving water bodies (see vegetation clearing). Decreased groundwater recharge can reduce in-stream summer low flows (see grading, excavation, filling and soil compaction). Impervious surfaces also contribute to an urban heat island effect, which affects local air quality. Increased impervious surfaces also increase wildlife habitat fragmentation and create hazards or barriers to wildlife movement (see vegetation clearing).

Removing native vegetation also increases runoff and erosion. Rainwater is captured and taken up by vegetation. This function is impaired when vegetation is removed, resulting in increased overland runoff. In turn the increases in runoff

increase volume and flows in receiving water bodies following storm events. Increased volumes and flow in water bodies can cause bank erosion, undercutting, and slumping, and flooding. Vegetation also filters surface stormwater flows removing pollutants and sediment. These impacts to natural resources may be attributed to vegetation clearing that occurs far away from inventoried areas containing significant resources because stormwater is piped great distances within the city.

No Local Protection Option (Reliance on State Regulations)

Under the no local protection option, LSW would have limited protection under State law, which may allow for removal and fill of wetlands, provided that there is no reasonable alternative and that lost functions and values are mitigated. However, from an environmental standpoint, created wetlands may not provide the same ecological function as naturally occurring wetlands. Thus, reliance on DSL regulations (without local protection) would have adverse environmental consequences.

Limited Protection Option (Application of the WRD)

Ordinance 950 would limit wetland fill and removal for most types of residential, commercial, and industrial development. However, the limited protection program would allow many activities associated with the construction and maintenance of public facilities that have the potential to significantly impact wetland environmental functions. For new facilities (such as new roads, parks, and other uses), the WRD has standards for avoidance, minimization and mitigation of development impacts on wetlands.

The City has chosen to allow maintenance of existing uses and facilities, including replacement of existing vegetation (some of which may be native), with corresponding adverse environmental impacts. For these reasons, the environmental consequences of a limited protection option (the City's adopted WRD) would be considerably more adverse than the full protection option – yet only slightly less adverse than the no local protection option (reliance on DSL). This is because DSL also has standards for avoidance, minimization and mitigation of development impacts on wetlands – whereas permitted and exempt uses (including public facilities, parks and other uses) are not required to do alternatives analysis and are not required to maintain native vegetation.

In conclusion, the WRD as applied to relatively low quality Wetlands CC, CC-02, EC, WC and WC-01 is designed to preserve open water channels and hydrological capacity – but does little to protect limited wildlife habitat and water quality functions.

Energy Consequences for Relatively Low Quality LSW

Energy consequences include effects of each option on transportation connectivity, which reduces vehicle miles traveled and supports alternative transportation modes), compact

urban growth (which conserves energy when compared with more expansive growth forms, shading (provided by some trees for some LSW), and storm water retention (which uses less energy than underground conduits – especially when construction costs are considered).

Full Local Protection Option (No Conflicting Land Uses Allowed)

The energy consequences of full local protection would be mixed. On the one hand, the existing surface (ditch) drainage system consumes relatively little energy. Where trees are present, preservation of relatively low value wetlands can provide summer shading and cooling. On the other hand, the full local protection option limits street connectivity and can result in a less compact urban growth form, which has adverse energy consequences.

No Local Protection Option (Reliance on State Regulations)

The energy consequences of relying on state regulations are also mixed. In cases where the existing surface (ditch) drainage system does not impede transportation connectivity or efficient urban development, there would be no reason to replace relatively "green" drainage ditches with less energy-efficient "gray" conduit systems. However, in some case, replacing drainage ditches with pipes may result in more efficient use of scarce urban land. In such cases, constructing underground pipes to drain relatively low quality farmed wetlands or to replace surface drainage ditches consumes relatively little energy – when compared with the energy it would take to construct storage facilities to replace the hydrological functions of higher quality open water wetlands.

Many relatively low value wetlands do not have trees, so the summer shading and cooling effect is limited in any case. Where ditches have trees, there would be adverse effects on summer cooling resulting from filling linear wetlands. On the other hand, the no local protection option allows for street connectivity where consistent with the Transportation System Plan and greater flexibility can result in more efficient development and a more compact urban growth form, which have positive energy consequences.

Limited Protection Option (Application of the WRD)

The energy consequences of applying WRD protection to relatively low quality wetlands would also be mixed, but are generally more positive than the full local protection option. In cases where the existing surface (ditch) drainage system does not impede transportation connectivity or efficient urban development, there would be no reason to replace relatively "green" drainage ditches with less energy-efficient "gray" conduit systems. Many relatively low value wetlands do not have trees, so the summer shading and cooling effect is limited in any case. On the other hand, the limited protection option allows for street connectivity; however, the WRD lacks the flexibility necessary to allow for wetland channel fill and removal that can result in more efficient development and a more compact urban growth form.

Recommendations

Recommendations and the City's Program Decision for relatively low quality wetlands are found in Section 6 of this analysis.

5. ESEE CONSEQUENCES ANALYSIS – RELATIVELY HIGH QUALITY LSW

This section considers the ESEE consequences of three alternatives for protecting relatively high quality but nevertheless significant wetlands as required by the Goal 5 rule:

(a) Full local protection (allowing no conflicting land uses or activities);
(b) No local protection (relying solely on DSL regulations); and
(c) Limited local protection[11] in additional to DSL regulation.

The ESEE consequences of full local protection, no local protection (reliance on DSL), and limited local protection (application of the City's WRD ordinance) related to relatively low quality LSW, discussed in Section 4, generally also apply to relatively high quality wetlands. However, adverse environmental consequences from conflicting uses and activities are more severe for relatively high quality wetlands because they each have two (or more) critical wetland functions. Notably, Wetlands CC-01 and CC-04 have intact wildlife habitat function which depends largely on the presence of native plant species.

Economic Consequences for Relatively High Quality LSW

Several of the relatively high quality LSW identified in Table 2 are zoned Industrial or Commercial (Wetlands CC-04, EC-01, and parts of FC-01).

Full Local Protection Option (No Conflicting Land Uses Allowed)

The economic consequences of full local protection could be adverse, because relatively high quality LSW could no longer be filled or relocated to allow for efficient urban development or for extension of infrastructure. In addition to prohibiting residential, commercial, industrial and public uses allowed by the base zone, full local wetland protection would make it impossible to extend streets and utilities necessary to allow for access and full utilization of underdeveloped properties.

For these reasons, there could be significant adverse economic impacts resulting by a local ordinance that fully protected (allowed no conflicting land uses on) relatively low quality LSW.

On the other hand, a closer look at individual LSW in this category reveals the following:

[11] The "limited protection option" relies on the City's Water Resources Overlay District (WRD). The WRD is intended to conserve the significant stream corridors, locally significant wetlands and approved wetland mitigation sites, consistent with the Goal 5 Administrative Rule (OAR Chapter 660, Division 23).

- Laurel Elementry School appears to have been constructed around **Wetland CC-01**; therefore, it does not appear that retaining Wetland CC-01 on the school site would adversely affect the school's potential expansion. However, the District may want to construct trails in or near the wetland.

- **Wetland CC-04** is located on the Industrial land (the "Weyerhaeuser site") south of High Pass Road and east of Highway 99, between the railroad tracks. Development has occurred on this site while protecting most of this relatively high quality forested wetland. Moreover, mitigating for functional values that would be lost as a result of filling this wetland would be extremely costly. Therefore, there do not appear to be substantial adverse economic consequences associated with applying the WRD to this relatively high value LSW.

- **Wetland EC-01** abuts Industrial and Commercial land along Highway 99. This land appears to have been developed around this open water wetland, which also serves a drainage function. Mitigating for functional values that would be lost as a result of filling this wetland would be extremely costly.

- **Wetland EC-02** abuts residential land within the UGB and EFU land to the east. It is doubtful that protection of less than one-tenth of an acre[12] of this open water wetland would have substantial adverse economic consequences, since a residential subdivision appears to have been developed around the wetland and its serves a valuable drainage function for existing development.

- The economic consequences of protecting delineated portions of **Wetland FC-01** in this large wetland complex were considered in 2002 when the City made the decision to protect this wetland with an Open Space designation. However, wetlands east of Flat Creek were not considered.

No Local Protection Option (Reliance on State Regulations)

The economic consequences of no local protection (relying on the State's fill and removal law) would be positive when compared with the full local protection option. DSL regulations allow some flexibility to allow conflicting urban uses where no reasonable alternative exists; and, like the limited local protection option, DSL regulations may allow road and utility extensions where necessary to serve urban development.

[12] Wetland EC-02 contains 0.06 acres within the UGB.

Thus, there may be situations where it makes economic sense go through the state process to allow for more efficient urban development. Although there could be economic costs associated with this process (which requires on- or off-site mitigation, or payment of a fee to DSL), these costs may be off-set by increased development potential of sites affected by LSW. Thus, the economic impact of no local protection (relying solely on DSL regulations) could be positive in many cases.

Limited Protection Option (Application of the WRD)

The City's Water Resources District (WRD) offers the same limited protection to relative high quality wetlands as it does to selected relatively low quality LSW within its boundaries (Wetlands CC, CC-02, EC, FC-01, WC and WC-01).

For locally protected LSW, the WRD balances ESEE consequences by allowing public facilities, park and recreation and other allowed uses with some mitigation. The WRD explicitly recognizes that the local limited protection program is *in addition to* DSL fill and removal requirement, which require an applicant demonstrate why a wetland cannot be avoided, to show how impacts have been minimized, and to meet demanding DSL wetland mitigation requirements.

Application of the WRD in industrial areas would restrict local industrial development and expansion affecting Wetlands CC-04, EC-01 and FC-01. Generally speaking, fill and removal of relatively low quality wetlands is more feasible (and less expensive) than fill and removal of relatively high quality wetlands – because there are fewer functions and values to replace. Thus, the feasibility of wetland fill and removal using the DSL review process is questionable.

However, application of the WRD to relatively high quality wetlands with open water that are not zoned for Industrial use could be reasonably effective in maintaining their aesthetic value (notably Wetlands CC-04, EC-01, EC-02 and portions of FC-01). The City notes that aesthetics have economic value for nearby Residential and Public uses. Application of the WRD to these LSW limits the likelihood that these wetlands will be relocated, piped or filled to facilitate residential, commercial or public uses.

Although the WRD allows for public facilities necessary to serve adjacent development (subject to an alternatives analysis), and recreational and water-dependent uses, it does not permit filling or relocating drainage channels or wetlands with open water to allow for these and other exempt, permitted and conditionally allowed types of urban development.

Thus, unlike the no local protection option (relying on DSL requirements), the limited protection option would offer greater flexibility to permit fill of relatively low quality wetlands in Industrial areas, while protecting open water channels in Industrial, Residential, Commercial and Public areas of the City .

Social Consequences for Relatively High Quality LSW

Relatively high quality LSW provide aesthetic and functional benefits for a community. For example, a wetland can add value and enjoyment in a residential setting, or provide places to relax and enjoy scenic views in a work setting. Relatively high quality LSW in particular can provide social values in terms of connecting city dwellers to outdoor recreational opportunities. Open and vegetated water areas can provide aesthetic enjoyment to passers-by and adjoining property owners and employers. Wetlands can also provide educational value when they are relatively high quality and accessible to schools – as is the case with Wetland CC-01.

However, protecting relatively high quality LSW on otherwise buildable land can have the unintended consequence of increasing housing costs or decreasing job opportunities, which have adverse social consequences. Because most relatively high quality wetlands listed in Table 2 offer considerable aesthetic value and (in some cases) fish and wildlife habitat value, their protection should be balanced against adverse impacts on the buildable land supply for housing and employment.

Finally, Junction City decision-makers place a high value on individual property rights and oppose unnecessary government regulation. Generally speaking, the City is opposed to multiple layers of government regulation – and for this reason is loath to duplicate regulations already enforced by the Division of State Lands. This social value accounts for the City's decision to provide greater flexibility in the Junction City Water Resources District (WRD) than provided in L-COG's Model Wetland Code.

Full Local Protection Option (No Conflicting Land Uses Allowed)

The social consequences of full local protection are mixed. On the one hand, relatively high quality wetlands contribute to urban aesthetics and provide a direct connection to nature. On the other hand, protecting these relatively high quality wetlands could potentially limit development efficiency (thereby increasing housing costs, decreased job opportunities, decreased recreational opportunities, decreased access), with corresponding adverse social impacts.

Specific social consequences from full local protection are described below:

- **Wetland CC-01** is unique in Junction City because of its location on the Laurel Elementary School site; therefore, protecting Wetland CC-01 would have positive educational and social consequences. Protection of Wetland CC-01 would not limit housing or job opportunities on this publicly-owned land. Trails could be built at the edge of the wetland without limiting viewing opportunities for students. Exempting replacement of existing vegetation (including the removal of native vegetation) from local regulation would not be compatible with the wetland's educational function.

- **Wetland CC-04** is relatively inaccessible with limited visibility from Highway 99. Therefore, there are not major social consequences from applying the WRD district to this wetland.

- **Wetland EC-01** provides an aesthetic community or social benefit because of its "open water" character and has high visibility from Highway 99. At the same time, there are community benefits from allowing conflicting public and transportation facility uses.

- **Wetland EC-02** provides an aesthetic community or social benefit because of its "open water" character, but has relatively low visibility.

- The Flat Creek portion of **Wetland FC-01** provides an aesthetic community and social benefit because of its "open space" character and visibility from nearby residential areas. In 2002, the City applied the SCWD overlay to this site in recognition of its community value. In 2007, a City-approved PUD development plan avoided further development of FC-01 consistent with City's Open Space plan designation and WRD overlay.

No Local Protection Option (Reliance on State Regulations)

Documented social consequences of the no local protection for relatively high quality wetlands are less positive than the full protection option, because aesthetics and educational concerns are better addressed through full protection. On the other hand, the City values property rights and discourages duplication in government review, and therefore is hesitant to impose additional burdens on property owners to achieve social objectives.

DSL requires mitigation for some wetland values that may be lost to development, while allowing more efficient use of residential, commercial, industrial and public land – with corresponding social benefits associated with lower housing costs, increased job opportunities, and increased recreational opportunities. However, the providing no local protection (relying exclusively on DSL) would not ensure preservation of open water areas and educational opportunities.

Limited Protection Option (Application of the WRD)

The social consequences of a limited protection option (application of the City's WRD to relatively low quality wetlands), could be less adverse than the full protection option for two reasons:

1. Public facilities, parks and recreational uses, and other relatively low impact uses are permitted in relatively low quality LSW; and

2. Limitations on fill and removal of open channels will preserve the aesthetic value of LSW with open water (Wetlands CC-04, EC-01, EC-02, and some of FC-01)).

Although replacement of existing vegetation (including native vegetation) is permitted when associated with an allowed WRD use, the City places greater weight on the social (*i.e.*, aesthetic) value of relatively high value LSW than it does on the wildlife habitat, water quality, and hydrological control functions associated with these relatively high quality LSW.

Environmental Consequences for Relatively High Quality LSW

Relative high quality LSW provide a wide array of environmental benefits. They protect and preserve drinking water supplies because they purify surface water and ground water. They also reduce soil erosion because the vegetation holds the soil in place. The wetlands in Junction City specifically help to protect life and property during floods by storing and absorbing water. Moreover, they can provide limited fish and wildlife habitat function due to a presence of water, habitat for breeding, nesting, feeding and predator escape.

Relatively high quality LSW have greater fish and wildlife habitat value (due to the relative abundance of native vegetation), and most have intact water quality and storage functions. Moreover, vegetation in relatively high quality wetlands typically is more likely to be dominated by native species.

Unlike lower quality wetlands described in Table 1, the relatively high quality wetlands described in Table 2 offer more obvious community benefits. The five relatively high quality LSW are: **Wetland CC-01; Wetland CC-04; Wetland EC-01;[13] Wetland EC-02 and Wetland FC-01.**[14]

These wetlands are considered relatively high value because they have some combination of the following characteristics:

- Diverse wildlife habitat – due to the presence of multi-layered, native vegetation (Wetlands CC-01 and CC-04);
- Intact water quality *and* hydrologic control (Wetlands CC-04, EC-01, EC-02);
- Educational value (Wetland CC-01); or have an existing
- Junction City Open Space designation (Wetland FC-01).

Table 4 on the following page (Table 2 repeated for ease of reference) summarizes the size and ecological function for each wetland in this category.

[13] EC-01 is mostly outside the Junction City UGB; only the western portion of this LSW would be subject to the WRD overlay.

[14] Note: The eastern portion of FC-01, including DSL #08-0239 and the public sewage treatment site (DSL #08-0582) that are not currently protected by local regulations would continue to be subject *only* to DSL (and not local) review.

Table 4: Relatively High Quality Locally Significant Wetlands (LSW) (Table 2 repeat)

Wetland Code	Wildlife Habitat	Wetland Acres	Educational Value	Water Quality	Hydrologic Control
CC-01	**Diverse**	0.5	**Yes**	**Intact**	Impacted
CC-04	**Diverse**	14.0	No	**Intact**	**Intact**
EC-01	Limited	2.0	No	**Intact**	**Intact**
EC-02	Limited	0.9*	No	**Intact**	**Intact**
FC-01	Limited	216.5	No	Impacted	**Intact**

Note: Quality is based on size, OFWAM results and regulatory status.
* EC-02 has only 0.06 acres within the Junction City UGB; the remaining 0.83 acres are located outside the UGB.

Source: Winterbrook Planning and Junction City Draft Local Wetlands Inventory (2010)

- **Wetland CC-01** has intact water quality and hydrological control functions. Wetland CC-01 is unique in Junction City because of its location on the Laurel Elementary School site (the reason for its exceptional educational value).

- **Wetland CC-04** is a large (14 acres) forested wetland complex with considerable native vegetative and wildlife habitat diversity; Wetland CC-04 also has "intact" water quality and hydrological control functions. Wetland CC-04 is located on Industrial land (the Weyerhaeuser site) south of High Pass Road and east of Highway 99, between the railroad tracks.

- **Wetland EC-01** is unusual because of its intact water quality *and* hydrological control functions. It also provides an aesthetic community benefit because of its "open water" character and visibility from Highway 99.

- **Wetland EC-02** is also an open water wetland that has intact water quality *and* hydrological control functions. However, most of this wetland lies outside the UGB and therefore is not within Junction City's jurisdiction.

- **Wetland FC-01** is associated with the "Oaklea Site" and is located on both sides of Flat Creek west of Oaklea Road and north of the sewage treatment ponds. This wetland complex covers 216.5 acres and includes two delineations approved by DSL.[15] The Junction City Comprehensive Plan map designates some of this wetland complex as "Open Space". The Open Space designation is implemented by the City's adopted Stream Corridor and Wetlands Overlay District, which prohibits most types of urban development. In 2007-08, some of Wetland FC-01 was protected as a condition of approval for residential planned unit development on the northern (residential) portion of the Oaklea property.

[15] Includes most of the approved wetland delineations east of Flat (Crow) Creek (DSL File Numbers 98-0293 and 04-0250).

Full Local Protection Option (No Conflicting Land Uses or Activities Allowed)

The environmental consequences of full protection would be positive because of the wildlife habitat, educational value, water quality and hydrological control functions that characterize relatively high quality wetlands. In particular, Wetlands CC-04 provides diverse wildlife habitat, intact water quality and intact hydrological control functions, while LSW in this group each provide at least two critical wetland functions.

Full protection would prohibit land uses and activities allowed in the WRD overlay zone, many of which would adversely affect the characteristics of this wetland group. For example, grading activities and soil compaction can accelerate soil loss and erosion. These activities can reduce the capacity of soil to support vegetation by disturbing the soil structure and decreasing soil fertility, microorganisms, seeds and rootstocks. Soil porosity and stormwater infiltration can be reduced by grading, excavating, filling and soil compaction. This in turn can reduce groundwater recharge and in-stream summer and fall low flows, which adversely affects aquatic species. The full protection option would prohibit such uses in and around wetlands.

Adding impervious surfaces (e.*g*. buildings, parking areas, roads, sidewalks and driveways) alters the hydrologic cycle by preventing stormwater infiltration and concentrating overland flow. This results in increased stormwater runoff and decreased groundwater recharge. Increased stormwater runoff can result in increased volume and flows in receiving water bodies (see vegetation clearing). Decreased groundwater recharge can reduce in-stream summer low flows (see grading, excavation, filling and soil compaction). Impervious surfaces also contribute to an urban heat island effect, which affects local air quality. Increased impervious surfaces also increase wildlife habitat fragmentation and create hazards or barriers to wildlife movement (see vegetation clearing).

Removing native vegetation also increases runoff and erosion. Rainwater is captured and taken up by vegetation. This function is impaired when vegetation is removed, resulting in increased overland runoff. In turn the increases in runoff increase volume and flows in receiving water bodies following storm events. Increased volumes and flow in water bodies can cause bank erosion, undercutting, and slumping, and flooding. Vegetation also filters surface stormwater flows removing pollutants and sediment. These impacts to natural resources may be attributed to vegetation clearing that occurs far away from inventoried areas containing significant resources because stormwater is piped great distances within the city.

Moreover, wetlands with diverse wildlife habitat typically have two or more layers of native plant species. Tree canopy and associated understory vegetation creates shade and local microclimate effects that cool the air and water, and maintain humidity and soil moisture. Trees and vegetation also help capture carbon dioxide;

carbon dioxide is a contributing factor to climate change. All of these functions are adversely affected when the vegetation is removed.

Clearing vegetation also removes important structural features of the forest such as multiple layered canopies, snags and downed logs, and large trees. Clearing of vegetation removes root structure that holds soils in place and can result in soil erosion and landslides, especially on steep slopes.

Removal of vegetative cover reduces habitat for native wildlife by removing food, nesting opportunities, cover, and perching and roosting locations. Removal of streamside or shoreline vegetation also eliminates sources of leaf litter (food for in-water organisms), and woody debris that provides aquatic habitat. Wildlife affected by vegetation removal includes mammals, birds, reptiles, amphibians, fish and insects. Removal of vegetation can fragment riparian and upland wildlife movement corridors, isolate remaining vegetation patches, and limit wildlife access to water. These impacts impede wildlife migration and can limit recruitment from other areas, making wildlife populations more vulnerable to disease, predation and extirpation.

Some vegetation types have declined in the Junction City area due to clearing and grading for development and the use of ornamental vegetation in landscaping (not replacing cleared vegetation with like species). Certain assemblages, such as native bottomland ash forests, require specific soil, water and sun exposure to survive and are slow growing, taking many years to become established. These vegetation assemblages still exist along secondary drainageways and wetlands. Removal not only reduces habitat functions as discussed previously, but also would contributes to the decline in these unique vegetation types and potentially disappearance within the city.

The following information is provided with respect to the environmental consequences of full protection for each of the five relatively high quality wetlands:

- **Wetland CC-01** has intact water quality and hydrological controls function. It has high potential for restoration of native plant species as an educational project. Therefore full protection of Wetland CC-01 would have positive environmental consequences.

- **Wetland CC-04** is a large (14 acres) forested wetland complex with considerable vegetative and wildlife habitat diversity with "intact" water quality and hydrological control functions. Therefore full protection of Wetland CC-04 would have positive environmental consequences.

- **Wetland EC-01** and EC-02 are unusual because of their intact water quality *and* hydrological control functions. Therefore full protection of Wetland EC-01would have positive environmental consequences.

- **Wetland FC-01**is associated with the "Oaklea Site" and is located on both sides of Flat Creek west of Oaklea Road and north of the sewage

treatment ponds. This wetland complex covers 216.5 acres and includes two delineations approved by DSL. Development of Flat Creek and adjacent wetlands would have adverse environmental consequences.

No Local Protection Option (Reliance on State Regulations)

Under the no local protection option, LSW would have limited protection under state law, which may allow for removal and fill of wetlands, provided that there is no reasonable alternative and that lost functions and values are mitigated. However, from an environmental standpoint, created wetlands may not provide the same ecological function as naturally occurring wetlands. Thus, reliance on DSL regulations (without local protection) would have adverse environmental consequences when compared with the full protection option.

Limited Protection Option (Application of the WRD)

Ordinance 91 would limit wetland fill and removal for most types of residential, commercial, and industrial development. However, the limited protection program would allow many activities associated with the construction and maintenance of public facilities that have the potential to significantly impact wetland environmental functions. For new facilities (such as new roads, parks, and other uses), the WRD has standards for avoidance, minimization and mitigation of development impacts on wetlands.

The City has chosen to allow maintenance of existing uses, including replacement of existing vegetation (some of which may be native), with corresponding adverse environmental impacts. Especially for Wetlands CC-01 and CC-04, this could mean the loss of a critical wetland function (wildlife habitat) and serious degradation of water quality. For these reasons, the environmental consequences of a limited protection option (the City's adopted WRD) would be more adverse than the full protection option – yet less adverse than the no local protection option (reliance on DSL).

The environmental consequences of a limited protection option (the City's adopted WRD) would be considerably more adverse than the full protection option – and only slightly less adverse than the no local protection option (reliance on DSL). This is because DSL has standards for avoidance, minimization and mitigation of development impacts on wetlands – whereas permitted and exempt uses (including public facilities, parks and other uses) are not required to do alternatives analysis and are not required to maintain native vegetation.

Moreover, the City's limited protection program exempts removal of native plants from local review. Especially for Wetlands CC-01 and CC-04, this could mean the loss of a critical wetland function (wildlife habitat) and serious degradation of water quality.

In conclusion, the WRD as applied to relatively high quality Wetlands CC-01, CC-04, EC-01, and EC-02 and portions of FC-01 is designed to preserve open water channels and hydrological capacity – but does little to protect critical wildlife habitat and water quality functions.

Energy Consequences for Relatively High Quality LSW

Energy consequences include effects of each option on transportation connectivity, which reduces vehicle miles traveled and supports alternative transportation modes), compact urban growth (which conserves energy when compared with more expansive growth forms, shading (provided by trees for some LSW), and storm water retention (which uses less energy than underground conduits – especially when construction costs are considered).

Full Local Protection Option (No Conflicting Land Uses Allowed)

The energy consequences of full local protection would be mixed. On the one hand, the existing surface (ditches and wetlands) drainage system consumes relatively little energy. Where trees are present, preservation of relatively high value wetlands can provide summer shading and cooling. On the other hand, the full local protection option could limit street connectivity and can result in a less compact urban growth form, which have adverse energy consequences.

No Local Protection Option (Reliance on State Regulations)

The energy consequences of relying on state regulations are also mixed. In cases where the existing surface (ditches and wetlands) drainage system does not impede transportation connectivity or efficient urban development, there would be no reason to replace relatively "green" drainage ditches with less energy-efficient "gray" conduit systems. However, in some case, replacing drainage ditches and wetlands with pipes may result in more efficient use of scarce urban land. In such cases, constructing underground pipes to drain relatively high quality farmed wetlands or to replace surface drainage ditches consumes relatively little energy – when compared with the energy it would take to construct storage facilities to replace the hydrological functions of higher quality open water wetlands.

Two relatively high value wetlands have substantial tree cover, so the summer shading and cooling effect is valuable in such cases. On the other hand, the no local protection option allows for street connectivity, placement of public utilities and parks, and provides greater flexibility can result in more efficient development and a more compact urban growth form, which have positive energy consequences.

Limited Protection Option (Application of the WRD)

The energy consequences of applying WRD protection to relatively high quality wetlands would also be mixed, but may be more positive than the full local protection option. In cases where the existing surface (ditches and wetlands) drainage system does not impede transportation connectivity or efficient urban development, there would be no reason to replace relatively "green" drainage ditches with less energy-

efficient "gray" conduit systems. This is more likely in the case of relatively high quality wetlands – which tend to be located in less developed areas. On the other hand, allowing public and transportation facilities within, for example, Wetland CC-04, clearly has positive energy consequences because Highway 99W improvements may need to be made to maintain constant vehicle speeds through town.

6. PROGRAM DECISION

Planning Commission Recommendation for Relatively Low Quality Wetlands

Based on the ESEE analysis – and especially based on the adverse social and economic consequences of overlapping governmental regulations – the Planning Commission recommended (and the City Council approved) no local protection for the following relatively low quality LSW with conflicting Industrial zoning:

- Wetland CC-03
- Wetland FC-02
- Wetland FC-03

Primarily to protect the open water aesthetic and flood control qualities, the Planning Commission recommended (and the City Council approved) application of a modified version of the WRD to the following relatively low quality wetlands:

- Wetland CC
- Wetland EC
- Wetland FC-01
- Wetland WC
- Wetland WC-01

Recommendation for Relatively High Quality Wetlands

Based on the ESEE analysis, the five relatively high quality wetlands listed in Table 3 are recommended for limited protection under the City's proposed WRD overlay provisions:

- Wetland CC-01
- Wetland CC-04
- Wetland EC-01
- Wetland EC-02
- Wetland FC-01

However:

- Only portions of Wetland FC-01 (Oaklea) that are now protected by the proposed WRD overlay (or by conditions of land use approval) are included in this recommendation. The remaining LSW west of Oaklea Road and east of Flat Creek would be subject only to DSL regulation. In addition, areas originally designated as Open Space for bike path purposes would be subject only to DSL regulation.

- Most of Wetland EC-02 is located outside the UGB, so would not be affected by the WRD zone. Only the portion of Wetland EC-02 that is within the existing Junction City UGB is included in this recommendation.

Overall, applying the WRD overlay to all of the relatively high quality LSW listed in Table 3 would result in limited local protection for an additional 17.3 acres.

Rational for Application of the WRD to Specific LSW

The Planning Commission recommended and the City Council decided to apply the WRD to the following wetlands *primarily* (but not exclusively) for the reasons shown on Table 5:

Table 5: Planning Commission Reasons for Applying (or not) WRD Protection

LSW	Decision	Reasoning
Relatively Low Quality Wetlands		
CC	Partial Protection under WRD	To ensure that the channel is not filled or piped to maintain aesthetic appeal; no restrictions on vegetation removal or planting of ornamental species.
CC-02	Partial Protection under WRD	To ensure that the wetland is not filled to maintain aesthetic appeal, while allowing maintenance of stormwater facility
CC-03	No Local Protection	To allow potential industrial expansion.
EC	Partial Protection under WRD	To ensure that the channel is not filled or piped to maintain aesthetic appeal; no restrictions on vegetation removal or planting of ornamental species.
FC-01	Partial Protection if under existing stream corridor overlay; otherwise No Local Protection	Planning Commission recommends a lower level of protection for the area (than under the existing stream corridor overlay) to allow existing and planned public improvements in this area (e.g. future park, force mains, etc.).
FC-02	No Local Protection	To allow potential industrial expansion.
FC-03	No Local Protection	To allow potential industrial expansion.
WC	Partial Protection	To ensure that the channel is not filled or piped to maintain aesthetic appeal; no restrictions on vegetation removal or planting of ornamental species.
WC-01	Partial Protection	To ensure that the channel is not filled or piped to maintain aesthetic appeal; no restrictions on vegetation removal or planting of ornamental species.
Relatively High Quality Wetlands		
CC-01	Partial Protection under WRD	To allow passive recreational improvements, such as pedestrian paths/footbridges, etc.
CC-04	Partial Protection under WRD	To accommodate planned future improvements (such as the future couplet) as well as maintenance to existing improvements, such as the railroad right-of-way.
EC-01	Partial Protection under WRD	To accommodate potential future improvements (such as expansion of the existing bridge or adjoining commercial uses) as well as maintenance to existing improvements, such as the existing rights-of-way.
EC-02	Partial Protection under WRD	To accommodate adjoining landowner improvements, such as ornamental landscaping.
FC-01	Partial Protection if under existing overlay; otherwise No Local Protection	Planning Commission recommends a lower level of protection for the area (than under the existing stream corridor overlay) to allow existing and planned public improvements in this area (e.g. future park, force mains, etc.).

7. IMPACTS ON BUILDABLE LAND SUPPLY (BLI)

Both the Goal 5 (natural resources) and the Goal 10 (housing) rules require maintenance of a 20-year supply of buildable land to meet residential, employment and public needs. The 2010 LWI helps determine how much buildable is within the Junction City UGB.

The Goal 5 administrative rule (OAR 660-0023-0070(1)) requires that buildable lands affected by Goal 5 measures must be accounted for at the next periodic review by amending the UGB, re-designating land within the UGB, or both:

> ***Buildable Lands Affected by Goal 5 Measures***
> *(1) If measures to protect significant resource sites inside urban growth boundaries affect the inventory of buildable lands in acknowledged plans required by Goals 9, 10 and 14, a local government outside of the Metro UGB, and Metro inside the Metro UGB, prior to or at the next periodic review, shall: (a) Amend its urban growth boundary to provide additional buildable lands sufficient to compensate for the loss of buildable lands caused by the application of Goal 5;(b) Redesignate other land to replace identified land needs under Goals 9, 10, and 14 provided such action does not take the plan out of compliance with other statewide goals; or (c) Adopt a combination of the actions described in subsections (a) and (b) of this section.*

The Goal 10 administrative rule (OAR 600-008-0005(2)) defines buildable land as follows:

> *"Buildable Land" means residentially designated land within the urban growth boundary, including both vacant and developed land likely to be redeveloped, that is suitable, available and necessary for residential uses. Publicly owned land is generally not considered available for residential uses. Land is generally considered "suitable and available" unless it: (a) Is severely constrained by natural hazards as determined under Statewide Planning Goal 7; (b) Is subject to natural resource protection measures determined under statewide Planning Goals 5, 15, 16, 17, or 18; * * **

The 2010 Junction City BLI prepared by ECONorthwest assumed that locally-protected LSW within the UGB are unbuildable. Thus, the BLI removed locally-protected LSW from the inventory of buildable residential lands and suitable employment lands. The City will need to account for the reduction in the buildable / suitable lands supply resulting from the 2010 LWI in one of the three ways identified in OAR 660-008-0005(1).